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To enrich lives through effective and caring service.

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To: Each Supervisor

From: Dave Lambertson
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Subject: **AB 1470 – SOLAR WATER HEATING BILL**

At the May 29, 2007 Board meeting, the Internal Services Department (ISD) was asked for a report back in three weeks related to AB 1470 – the Solar Water Heating and Efficiency Act of 2007. This report focuses on:

- The Key Provisions of AB 1470
- Effectiveness of Solar Water Heating
- Payback Period
- The San Diego Pilot
- Summary

The Key Provisions of AB 1470

AB 1470 would authorize the California Public Utilities Commission (CPUC) to implement a program for providing solar water heating incentives to residential and commercial customers. The incentives would not exceed $250 million over a 10 year period and would be funded through a surcharge on natural gas customers. Low-income customers would be excluded from the surcharge.

On June 6, 2007, the bill was passed out of the Assembly by a vote of 44-34 and was referred to the State Senate for committee assignment and debate. Key provisions of the bill are:

- The CPUC is to design and implement an incentives program to subsidize the installation of solar water heater systems in natural gas investor-owned utility service territories with a goal of implementing 200,000 systems by 2017.

- The CPUC will fund the program, up to $250 million over 10 years, through a consumption-based surcharge on gas customers, but exempts those customers with incomes below 300% of the federal poverty level.

- The CPUC will annually adjust the surcharge rate for each class of natural gas customers.

- At least 10% of the funds are to be allocated for low-income and affordable housing projects.

- Publicly-owned utilities will be required to establish a similar incentive program to help achieve the 200,000 solar water heater goal by 2017.

- The CPUC and the CA Energy Commission will be required to establish eligibility criteria for incentives eligibility. The proposed bill instructs the CPUC to use data from the San Diego Solar Water Heating Pilot in creating the program.

Like Senate Bill 1 (i.e., California's Solar Roofs Initiative), the solar water heater program incentives shall be greater initially and decline over the 10 year program life. Not later than July 1, 2010, the CPUC shall report to the Legislature on the effectiveness of the program and make recommendations as to any changes.

At this time, the specific amount of the surcharge has not been established. However, based on the ten year funding objective of $250 million the CPUC has stated that the typical residence will pay on average about 13 cents per month for the surcharge.

Finally, SB 1, which collects $3.5 billion over 10 years from electricity surcharges to subsidize solar power installations initially, contained provisions for solar heating. However, it was determined that it was not permissible for the costs of solar water heating installations that save natural gas to be offset with surcharges on electricity usage.

The Effectiveness of Solar Water Heating

Solar water heating works. The technology is proven and is used in a variety of locations in the world as a method to heat water. Solar water heaters come in a variety of configurations, differing in design and level of complexity. Most systems have back-up water heating such as electricity or gas. A solar water heating system usually consists of a hot water storage tank, a solar collector that absorbs solar energy and, in some cases, a circulation system.

Below are some pertinent excerpts from two recent reports on solar water heating that were referenced in the San Diego Pilot Program proposal. The reports are:

1) National Renewable Energy Laboratory (March 2007) – Technical Potential of Solar Water Heating to Reduce Fossil Fuel Use and Greenhouse Gas Emissions in the United States.

2) Environment California Research & Policy Center (April 2007) – Solar Water Heating, How California Can Reduce Its Dependence on Natural Gas. These reports state that:

- Solar water heating could save California the equivalent of 24% of natural gas use in homes.
- Solar water heating could save more natural gas than any other efficiency technology in commercial buildings.
- Between the residential and commercial potential for solar water heating, California could save over a billion therms, or 5.3% of all statewide natural gas consumption.
- 60% of residences in California and 75% of commercial buildings are suitable for solar water heating.
- At the end of 2005, 46 million homes in the world had solar water heating (a 14% increase from the year before). China accounts for 80% of the new systems. The technology is also used extensively in Europe, Turkey, Japan and Israel. The United States has 2% of world solar water heating installations.

Overall, this bill provides incentives for water heating in residential and commercial buildings.

Payback Period

A typical installation cost for an existing home is $6,000. Installation costs for new homes are generally around $3,000.

The "payback period" is the length of time it takes for the gas savings to offset the cost of installing a solar water heater. The payback period an any given solar water heating installation will vary depending on the size of the structure, the type of installation and other factors. For illustrative purposes, we have provided an estimate for a typical installation in an existing single family home. The math is as follows:

- The average home uses about 500 therms of natural gas per year: The average cost for this gas is approximately $ 720 per year.
- Approximately 40% of this gas (about 200 therms) is used for water heating.

- Solar Water Heaters can reduce the gas required to heat water by approximately 80% - this saves 160 therms per year – at today's prices for natural gas, that approximates $ 230 of savings per year.

- A typical solar water heating installation on an existing home costs $6,000. There are Federal tax credits available that lower this cost by $2,000. Without further incentives, the payback period would be around 17 years.

- State incentives proposed under AB 1470 (around $2,000) could bring the payback period down to ten years or less.

Should natural gas prices rise in the future, the payback period would obviously shorten.

The San Diego Pilot

In early 2007, the CPUC granted the San Diego Regional Energy Office (SDREO) $2.5 million to develop a pilot solar water heating market in the San Diego region using natural gas surcharges as incentives.

The SDREO is a Joint Powers Agency of local utilities, local governments and public agencies in the San Diego area. They administer and deliver energy efficiency programs in the region including solar power programs using funds authorized by SB 1. The stated goals of the Solar Water Heating Pilot Program are to:

- Install 750 solar water heating units
- Establish a qualified installer list
- Develop installation standards and protocols
- Use knowledge gained to produce a program model which can be used state-wide

The pilot program is supposed to start on July 1, 2007 and conclude on December 31, 2008.

Summary

As previously communicated to your Board, ISD recommends support of AB 1470. Our recommendation is based on the following:

- Solar water heating increases energy efficiency and reduces greenhouse gases. The technology is already proven and used extensively in many places in the world.

- California's Solar Power Initiative was highlighted by the passage of SB 1 which authorized the CPUC to collect $3.5 billion in electricity surcharges over 10 years to spur a market for solar power and solar heating installations. However, because the surcharges are only collected from electricity customers, solar water heating (which primarily reduces natural gas usage) could not be incentivized. AB 1470 corrects this situation.

- Solar water heating represents the single, potential largest source of natural gas savings in California's commercial office buildings.

- Even at $250 million dollars, AB 1470 still represents a very small portion of California residents. The comparison of AB 1470 with the San Diego pilot, below shows that AB 1470 still only reaches about 1.5% of residential buildings after 10 years.

Program	Target Installations	% of Residences (13 million) in the State	Program End Date	Program Cost	Potential Gas Savings
San Diego Pilot	750	.006%	2008	$2.5 million	$150,000
AB 1470	200,000	1.5%	2017	$250 million	$40,000,000

- Financial incentives are needed to stimulate the solar water heating market and to create reasonable payback periods for residents.

Please let me know if you have any comments or questions related to this report on have you staff contact Howard Choy at 323-881-3939.

DL: HC:z

c: David E. Janssen
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ISD Board Deputies